Wisconsin's Urban Forest Inventory— Making It Work for You

by Dick Rideout, State Urban Forestry Coordinator

DNR Division of Forestry

Then working with Wisconsin's communities to manage their urban forests, the first recommendation DNR urban foresters usually make is to do an inventory. How can you begin to manage something when you don't even know what you have? Interestingly, until recently, the DNR itself didn't have an overall inventory of the state's urban forest resource. We had plenty of information about the state's communities and what they were doing to manage their trees, and we used that to direct our

program. The tools and techniques to do a statewide urban forest inventory and analysis just weren't there, so we couldn't focus our efforts on the resource itself. But that all changed last fall when the USDA Forest Service published the first of its two pilot studies of Wisconsin's urban forests.

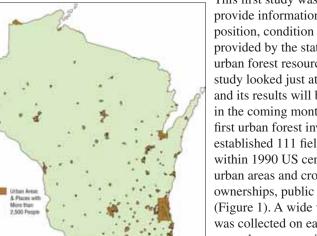
Figure 1. Wisconsin's 1990 census-defined urban areas.

This first study was designed to provide information on the composition, condition and benefits provided by the state's entire urban forest resource. The second study looked just at street trees and its results will be published in the coming months. In this first urban forest inventory, crews established 111 field plots falling within 1990 US census-defined urban areas and crossing all ownerships, public and private (Figure 1). A wide variety of data was collected on each plot which was then summarized and analyzed using the Forest Service's Urban Forestry Effects (UFORE) model. The result

gives a comprehensive picture of Wisconsin's urban forests and what they provide to Wisconsin residents.

The study not only has given us valuable information about our urban forest resource and how we should manage it, but even more importantly, the study has quantified the benefits of our urban forests which has

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Fall 2008



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Save the Date-Annual Urban Forestry Conference & Trade Show February 1–3, 2009 Green Bay, WI

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Community Profile:

Population: 1683
Tree City USA:
2 years
Growth Awards: 1
Street miles: >16
Number of parks: 3
Park/conservancy
areas: 221 acres
Hiking trails: 3 miles

Program Profile:

Staff: DPW, 1 full time, 1 part time Tree board: 1 staff, 1 citizen, 2 village board members 2008 UF budget:

Equipment: truck, chipper, loader, various power and hand tools

\$2000

Community Profile:

Village of Whiting

by Matthew Riberich, Director of Public Works & Parks Village of Whiting

The Village of Whiting is located between the City of Stevens Point and the Village of Plover where the Wisconsin and Plover rivers join. Because of this location, Whiting has a long history with trees dating back to the early 1850s. The first sawmill was built in what now is the Village of Whiting with the damming of the Plover River in the early 1850s. In 1947 the Village of Whiting was incorporated with 695 residents. From there the village improved its infrastructure by paving roads, creating park space and mostly creating a better place to live. Since incorporation, Whiting has grown to 1683 residents, developed three great parks, with sections of the state-recognized Green Circle hiking trail passing through, and has become a Tree City USA.

The first park was established with the closing of the mill on the Plover River in 1954. The next year the mill was removed and the land was split into two parks, named the Upper and Lower Whiting Parks, totaling more than 70 acres along the river. The area of the mill was filled in and planted with trees from a local nursery. Baseball diamonds, playgrounds and restrooms were added years later.

Whiting continued to improve infrastructure by installing its own municipal water supply system in 1964. This included 142 acres of fields and forest as a wellhead protection area. Since that time the village, with the help of volunteers, planted over 21,000 trees in the fields to help protect the water supply.



2007 Arbor Day celebration at village well field/oak wilt trail site.

In 1993 the village opened a compost site allowing Whiting residents to drop off leaves, grass and brush, thereby encouraging residents to compost. A non-burning village ordinance also assisted in the success of the site. With the opening of the compost site the village purchased a brush chipper and began performing its own tree maintenance. All grass clippings, leaves and brush brought in by residents or village staff are composted or chipped. All the materials are eventually made available to residents and also used in the parks system for trails and various projects.

In its effort to become a greener community, the Village of Whiting continued improving its urban forestry program and in 2005 investigated becoming a Tree City USA. The public works committee set a goal to achieve Tree City USA status as soon as possible. The village began reviewing ordinances, budget, parks and street trees and soon became aware of the need to update and improve many areas to attain Tree City standards.

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Editors: Laura Wyatt and Dick Rideout Contributors: Ian Brown, Cindy Casey, Kathy Gonzalez, Don Kissinger, Jeff Roe, Tracy Salisbury, Kim Sebastian, Candice Sovinski, Olivia Witthun and Al Zelaya

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For breaking UF news, anecdotes, announcements and networking opportunities, sign up for The Urban Forestry Insider, DNR's twice-monthly e-newsletter. Archives are at http://dnr.wi.gov/forestry/UF/resources/InsiderArchive.html

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Emerald Ash Borer Makes Its Wisconsin Debut

by Linda Williams, Forest Health Specialist and Bill McNee, Gypsy Moth Suppression Coordinator DNR Northeast Region

EAB Identified in Wisconsin—On Friday, August 1, specimens taken from a wooded residential lot near the village of Newburg in Ozaukee County were positively identified as emerald ash borer. That same day, three adult beetles were collected from a purple EAB sticky trap in Fireman's Park in Newburg. These specimens were later confirmed to be EAB as well. Though near the first site, Fireman's Park is in Washington County, meaning that EAB has now been detected in two Wisconsin counties.

Four-County Quarantine Established—Less than a week later, on August 7, the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) declared a quarantine for all of Ozaukee, Washington, Fond du Lac and Sheboygan Counties. The size of the infestation is currently unknown, so Fond du Lac and Sheboygan Counties were also included because of their proximity to the known infested area. A map of the EAB detections and quarantined counties is available from

www.emeraldashborer.wi.gov/pdf/WIEABQuarantine.pdf.

The quarantine restricts movement of hardwood firewood, ash nursery stock, ash logs and any other ash products that could transport EAB out of the quarantined counties. This quarantine affects logging operations, since it places restrictions on moving logs out of the four-county quarantined area in an effort to prevent the spread of EAB. DNR will be revising its management guidelines for landowners now that EAB has been found. For additional information about quarantine restrictions see

http://emeraldashborer.wi.gov/pdf/EasyGuideEABRegulations.pdf.

How quickly will things begin to happen? EAB adults have completed their emergence from infested material and will not emerge again until spring of 2009, meaning that we now have time to gather information needed to make the best management decisions. There is no risk of natural spread until next spring, so biologically, there is no need to rush to remove and destroy infested materials. Movement of infested material (firewood, logs with bark, etc.) becomes the focus for limiting the spread, and quarantine is a regulatory tool used by DATCP for this purpose. Likewise, educational efforts will be greatly emphasized to prevent further spread and inform impacted homeowners and businesses of the tools available for EAB management.

Press Release Information Available—Representatives of DNR and DATCP met with local government officials on Monday, August 11, to discuss the current EAB situation and state agency plans for the next few months. An information session for the general public was held on Tuesday, August 19, in West Bend. More information on the EAB discoveries and subsequent

quarantine can be found in the press releases available on the DATCP website:

http://datcp.state.wi.us/press_release/result.jsp?prid=2199 http://datcp.state.wi.us/press_release/result.jsp?prid=2200

Wisconsin's EAB Response Plan—The state's EAB response plan was updated and is available at www. datcp.state.wi.us/arm/environment/insects/emerald-ashborer/pdf/2008WIEABResponsePlan.pdf.

How big is the infestation?—Surveys to determine the extent and age of the infestation will be conducted throughout the fall and winter. An aerial survey of the area has already been completed, and areas with dead and dying trees will be ground-checked. Additional visual surveys will also be conducted to determine the extent of the infestation.

EAB Surveys Continue in Wisconsin—DATCP

survey crews continue to examine the Newburg area, where EAB was first detected in Wisconsin, for signs of additional infestations. During the initial visual survey of ash trees within 10 miles of Newburg, 148 locations (individual trees or clusters) were identified for further examination. The follow-up inspection of these points is two-thirds complete and is expected to conclude within two weeks. Many of those trees have been ruled out as infested, while others may require peeling. Some trees may house purple sticky traps next year. To date no additional EAB infestations have been found in Wisconsin.

An interesting fact: EAB has been found in over fifty Illinois communities since that state's first EAB find just two years ago in 2006!

DATCP's destructive tree survey is also underway. The following counties have been completed: Adams, Baron, Dane, Dunn, Fond du Lac, Grant, Green, Jefferson, Juneau, Kenosha, Kewaunee, La Crosse, Milwaukee, Monroe, Ozaukee, Portage, Rock, Sauk, Sheboygan, Walworth, Washington, Waupaca, Waushara and Winnebago. Work is currently underway in Columbia, Iowa, Manitowoc and Waukesha counties. No additional EAB infestations have been found to date. This will be the last year that DATCP will be doing destructive surveys and they will

instead be using the purple traps as their primary detection tool.

The DNR's detection-tree project in 25 state parks and forests is complete for this year, and no EAB larvae were found during peeling of six detection trees per property. Over 150 detection trees remain for peeling in future years. In addition, no EAB adults were caught on purple sticky traps hung at 24 of the state properties.

EAB Found Again in Wisconsin—



EAB adult beetle

D-shaped exit hole from Wisconsin site.



Urban Forestry Best Management Practices for Invasive Species

by R. Bruce Allison, Ph.D., owner of Allison Tree Care, Inc., Bryn Scriver, BMPs Editor WDNR Division of Forestry, and Olivia Witthun, BMPs Project Manager WDNR Division of Forestry

At its inception in 2004, the Wisconsin Council on Forestry (WCOF) identified and ranked critical forestry issues in Wisconsin based on the 2004 statewide forest plan. The top-ranked issue was the threat of invasive species. Invasive species can kill trees and other vegetation, thus affecting forest regeneration and productivity. To tackle this issue, the WCOF created the Forestry Invasives Leadership Team (FILT) and charged it with identifying and recommending policies and actions to protect Wisconsin's forests from invasive plants, insects and diseases.

FILT initiated efforts to collaboratively develop voluntary best management practices (BMPs) for invasive species. BMPs provide a framework for evaluating environmental threats, bringing the best available science and technological understanding to the issue, identifying associated user groups whose behavior can help mitigate the threat and building a framework for appropriate actions that can be adopted by those users. FILT divided this monumental task into four parallel BMP tracks to address invasive species in Wisconsin forests. They are:

- 1. Forestry BMPs for invasive species
- 2. Recreational forest user BMPs for invasive species
- 3. Urban forestry BMPs for invasive species
- 4. Utility and transportation rights-of-way BMPs for invasive species

A final draft of the forestry BMPs, which apply to traditional forestry practices, is currently in review after 21/2 years of development. A final draft of the recreational user BMPs may be available by the end of the year. The rights-of-way and urban forestry tracks got underway at the beginning of 2008.

The Wisconsin Urban Forestry Council took the lead for the urban forestry BMP track. Bruce Allison was appointed chair of an advisory committee created to represent the diverse urban forestry interests in Wisconsin. Members are practitioners, experts and affected stakeholders. They include the Wisconsin Arborist Association, the Wisconsin Nursery Association, the Wisconsin Landscape Contractors Association, the American Society of Landscape Architects, the Wisconsin Garden Club Federation, the Invasive Plant Association of Wisconsin and the University of Wisconsin, among others. The advisory committee will work in concert with a technical team to craft best management practices to slow the spread and introduction of invasive species in Wisconsin's urban forests.

A unique challenge of addressing invasive species collectively is the large and growing number of species that threaten Wisconsin forests. Effective guidelines will need to address many different threats, a wide range of appropriate responses, and must be easily adapted to address newly emerging threats.

One expected end product will be a manual of voluntary BMPs addressed to arborists, urban foresters, nursery growers, retailers, landscape architects, landscape contractors, grounds managers, nonprofits, local governments, private property owners and others. The document will contain recommendations on incorporating invasive species considerations into routine urban forestry activities such as management planning, landscape design, species selection, planting, maintenance and removal practices, sanitation and debris handling, as well as provide basic invasive species control recommendations.

The final implementation phase of the project will include developing a plan for moving forward with the BMPs, assisting in promoting their adoption, and encouraging their usage by practitioners and urban forest residents. It is hoped the organizations involved in the development of the BMPs will be able to incorporate them into their existing codes of practice.

The urban forestry BMPs for invasive species, and the consensus process used to develop them, provides Wisconsin with one of its best opportunities to prevent the introduction and establishment of invasive species and limit their spread in our urban and community forests. This project is one of the first of its kind in the nation. Wisconsin will serve as a role model for other states looking to address invasive species in their forested landscapes. "

Carlson, WDNR Forest Health Coordinator, discusses emerald ash borer early detection methods at the advisory committee's kickoff meeting for Urban Forestry BMPs for Invasive Species in Wisconsin.

Jane Cummings-



Project Profile:

Village of Shorewood Hills' EAB Readiness Plan Comes Just in Time

by Corey George, Forester, and Carli Morgan, Forestry Intern Village of Shorewood Hills

Months before the official confirmation of emerald ash borer in Wisconsin, Village of Shorewood Hills Forester Corey George collaborated with Davey Resource Group to prepare a comprehensive EAB readiness plan. The plan calls for a wide range of involvement from village workers and the surrounding community to better address the potential threats of EAB. A key goal of the readiness plan is to create a private ash tree inventory, in addition to the existing public tree inventory. As private trees are often overlooked in urban forests, the village felt this was an essential step in assessing the community's ash tree population.

The Shorewood Hills EAB Readiness Plan was made possible with the help of a DNR Urban Forestry Grant, which funded plan development, public awareness materials and a limited number of ash tree removals. The grant also allowed for the hiring of forestry intern Carli Morgan, a Forest Ecology and Management student at UW-Madison, who is conducting the private ash tree inventory.

To kick off the inventory, village workers and the Shorewood Hills Garden Club created an informational postcard that included an overview of EAB, tips on ash tree identification and a survey section to be returned by the resident. The survey asked residents to either count the number of ash on their property or request assistance with the inventory of their lot. Members of the local parks committee hand delivered the postcard in an effort to curtail mailing costs. Efforts to solicit ash tree counts from homeowners were similar to those conducted in Holland, Ohio.

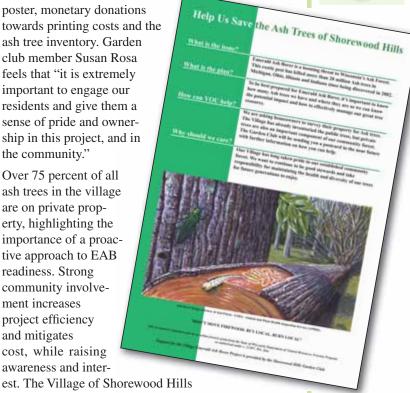
Thus far, 10 percent of the residents have responded and the postcard continues to serve as an effective public awareness tool. With the private ash tree inventory nearing completion, around 900 total ash have been accounted for, 400 of which have a significant diameter (>4" DBH). According to Davey Resource Group, an ash tree in this size category yields a fourfold increase in removal costs over smaller trees. Information gathered from this private inventory will assist the village forester in identifying high-risk areas and better prepare property owners for the damaging effects of the invasive beetle.

The Shorewood Hills Garden Club played an integral role in the success of the project. This dedicated group of resident volunteers was involved throughout the process, from the grant application to the actual inventory. They also contributed to the design of an EAB

poster, monetary donations towards printing costs and the ash tree inventory. Garden club member Susan Rosa feels that "it is extremely important to engage our residents and give them a sense of pride and ownership in this project, and in the community."

Over 75 percent of all ash trees in the village are on private property, highlighting the importance of a proactive approach to EAB readiness. Strong community involvement increases project efficiency and mitigates cost, while raising awareness and inter-

displays a healthy level of tree biodiversity, warranting unique attention to species management and preservation. With the impending invasion of emerald ash borer in the area, the village is confident that this readiness plan has provided crucial information and will serve as a cornerstone for further action.





Sue Rosa (left) and Carli Morgan (right) identify an ash tree and record the diameter.

Council News:

6

Threats and Opportunities

by Les Werner, Chair Wisconsin Urban Forestry Council

It has been quite the year for urban forestry in Wisconsin! From the 20 million by 2020 tree planting initiative unveiled last February at the combined WAA/ DNR conference to the discovery of emerald ash borer in Newburg in August, we have simultaneously been introduced to the future of Wisconsin's urban forestry efforts and the most serious threat to the health of the state's urban forests since Dutch elm disease in the 1960s. The upcoming year will be filled with a great deal of uncertainty, but I am convinced that how we respond to this most current threat and how we embrace the direction provided by the tree planting and tree care initiative will dictate future successes at all levels of urban forest management and operation. I am equally convinced that we, the State of Wisconsin, practitioners and advocates alike, must commit to both with the same level of enthusiasm and support.

With that being said, I would like to update you on the progress of the urban forestry initiative and the 20 million by 2020 urban tree planting campaign. The good news is that the initiative and the planting campaign have been warmly received and supported by the Governor's Task Force on Global Warming and the Wisconsin Council of Forestry. The final report, containing templates for action to address global warming, has been submitted to Governor Doyle for his review. The truly exciting and encouraging aspect of this report is that the urban forestry template is

the sole initiative to appear in two of the subcommittees' reports. Additionally, this past summer the urban forestry initiative was one of six forwarded to Governor Doyle by the Wisconsin Council on Forestry. This truly is good news. The not necessarily bad news—we are anxiously waiting to see what Governor Doyle will put forth in the upcoming budget. In the interim, the Urban Forestry Council has been busy preparing an action framework that lays out strategies to ensure the success of the initiative and the tree planting campaign. These are challenging and exciting times for urban forestry in Wisconsin. The private—public partnership that is the heart of the 20 million by 2020 tree planting campaign offers an opportunity for all to get involved. I urge you to do so.

Before I end, I want to pass along heartfelt thanks to Mr. Ken Ottman whose term as council chair ended this past August. Your leadership and vision has certainly inspired me! I am confident that I speak for the entire council when I say that urban forestry in Wisconsin has benefited from your leadership.

Wisconsin Urban Forestry Council

Serving as a voice for Wisconsin's urban forest, the role of the council is to advise the Wisconsin state forester and Wisconsin Department of Natural Resources on the best ways to preserve, protect, expand and improve Wisconsin's urban and community forest resources, as authorized by Wisconsin statue 15.04(1)(C).

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Associate Dean Mid-State Technical College

Mr. Kenneth Ottman, Past Chair

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Allison Tree Care, representing commercial arborists

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State Urban Forestry Coordinator, WDNR

Ms. Laura Wyatt

Urban Forestry Council Liaison, WDNR

Emerald Ash Borer, continued from page 3

Mid-October brought another EAB detection, this time in two recently planted ash trees in rural Kenosha County. In August, the trees were brought from Illinois in violation of the emerald ash borer quarantines. This was at the tail end of the EAB adult flight period, so the risk of adult emergence from these trees following planting is currently believed to be low. There is very little ash in the vicinity of the planting site and surveys in the area did not find any signs of additional infested ash trees. The two trees have now been destroyed. For the press re-

lease announcing the Kenosha County find, see http://emeraldashborer.wi.gov/pdf/KenoshaEAB.pdf.

EAB Found Again in the Upper Peninsula of Michigan—In October EAB was found in Delta County at Garden Corners (east of Escanaba). Since then, there have been several additional finds within a few miles. One is at Cooks, only four miles away but in Schoolcraft County. This brings to five the number of UP counties where EAB infestations have been found. Portions of Schoolcraft and Delta Counties have been quarantined. A map of the quarantined areas of the UP can be found at www.michigan.gov/eab. The Michigan Department of Agriculture has decided to focus its EAB efforts in the Upper Peninsula. Their quarantines have been changed so that ash wood and firewood can now be moved anywhere within Lower Michigan (although long-distance movement is still discouraged). This wood still cannot cross the Mackinac Bridge into the UP. More information on the EAB situation in Michigan can be found at www.michigan.gov/eab.

Firewood Movement and Quarantines in Wisconsin—Although it may be legal, we don't recommend long-distance firewood movement. Moving firewood long distances increases the risk of spreading pests and diseases such as emerald ash borer, gypsy moth and oak wilt. Hardwood firewood can't be moved out of the four counties quarantined for emerald ash borer (Ozaukee, Washington, Fond du Lac and Sheboygan Counties). It may be moved from another Wisconsin county through these four quarantined counties as long as the only stops are for fuel (a new clarification). A nice FAQ sheet about firewood and the quarantine is available at

http://dnr.wi.gov/forestry/fh/PDF/EAB_FAQ_Firewood.pdf.
An up-to-date firewood quarantine poster is available at http://dnr.wi.gov/forestry/fh/pdf/FirewoodQuarantineWI.pdf.

These restrictions are in addition to the existing DNR firewood rules, which states that firewood entering a state park or forest must have be from Wisconsin <u>and</u> originate from within 50 miles of that property.



S-shaped galleries from Wisconsin site.

Insecticide Treatments for Individual Trees—Now that EAB has been found in Wisconsin, homeowners may wonder if they should start treating their yard trees even if they live far away from the known infestation. This news release from Chris Williamson, a UW-Madison entomology professor, should answer most questions about treatment of yard trees: www.news.wisc.edu/15472. His current recommendation is that it's not worth treating trees to protect them from EAB if you live more than 10–12 miles from a known EAB infestation.

New EAB Pesticide Option for Wisconsin—DATCP has issued a special local need registration ("Section 24c") for an unregistered product called TREE-äge. This special registration allows for injection of the product into the trunks of ash trees (*Fraxinus* species) for control of EAB in Wisconsin. DATCP previously issued a different Section 24c for use of Safari as a trunk spray for EAB earlier this year. The special registration for TREE-äge can be found at

http://datcp.state.wi.us/arm/agriculture/pest-fert/pesticides/pdf/TREE-age.pdf.

Reporting EAB—Suspected EAB infestations can be reported to the EAB hotline, <u>1-800-462-2803</u>. DATCP and/or DNR staff will visit symptomatic sites.

EAB in the US—A current map showing all known EAB infestations is available at http://emeraldashborer.info/files/MultiState_EABpos.pdf.

What Damaged This Tree?



Turn to page 15 to find out...

Do you have pictures of tree damage others ought to know about? Send them to Kim Sebastian (address on page 16) and we'll print them here!

Urban Tree Health Matters:

Notes from the Plant Disease Diagnostics Clinic, 2008

by Brian D. Hudelson, Director UW–Madison Plant Disease Diagnostics Clinic

Throughout the 2008 season, I continued to receive numerous tree and shrub samples where the primary symptom of concern was some level canopy thinning and dieback. The origins of this branch loss appear to be quite varied, although typically the underlying cause(s) is (are) some variation on a reduction in water uptake or movement within the affected tree or shrub. Oftentimes piecing together the factors that have led to the poor performance of a specific tree or shrub can be akin to the solving of a murder in a mystery novel.

At least some of the dieback that I have observed appears to be a cumulative effect of several years of less than optimal rainfall that have occurred at a particular location. While the spring and early summer of 2008 were quite wet in much of Wisconsin, drought-like conditions have prevailed in much of the state over roughly the past five growing seasons. Extended periods of dry soil conditions can lead to the death of root hairs, as well as small fibrous roots, reducing water uptake and water movement in trees and shrubs.

The effects of summer drought stress have likely been compounded this past winter by the fact that many areas in Wisconsin had excessive snows that arrived before the ground had frozen. This likely led to cool and relatively moist soil conditions that were excellent conditions for certain root rot organisms (e.g., water molds such as *Phythophthora* and *Pythium*) to be active for much of the winter. Excessive rains and resultant high

soil moisture levels in late spring and early summer of 2008 likely extended the period of activity of these root rot organisms. Loss of root mass due to the activity of these pathogens has likely further reduced the ability of trees and shrubs to take up water.

Increased salt usage during the winter of 2007–08 has also likely contributed to the poor performance of many trees and shrubs. Excessive salt in the root zones of woody ornamentals can radically alter the ability of these plants to absorb water, thus leading to symptoms (including branch dieback) that are really identical to those one would expect from drought stress due to lack of rain. Salt sprays that splash onto trees along roadways can lead to the death of buds on deciduous



June 2008 flooding at Devil's Lake State Park.

Coming Events:



December 3–6, 2008 – American Society of Consulting Arborists annual conference, "Connections 2008." Loews Ventana Canyon Resort, Tucson, AZ. Visit www.asca-consultants.org/conferences.html.

December 17, 2008 – Urban Natural Resources Institute webcast, "Economic Value of Trees." Visit www.unri.org/webcasts/.

December 18, 2008 – ACT Brown Bag Lunch webcast, "Marketing & Communications, Part III: Building & Positioning Your Brand," noon–1:00PM. Visit http://actrees.org/.

December 19, 2008 – "Pruning Shrubs for a Reason" Brown Bag Program, noon–1:00PM. Contact your UW–County Extension office.

January 7–9, 2009 – Minnesota Green Expo, Minneapolis Convention Center. Call 888-886-6652 or visit www.minnesotagreenexpo.com.

tree branches, as well as result in needle browning on conifers. Travel virtually any major highway in the state and you will see this particular phenomenon.

Flooding in many areas of Wisconsin this spring and summer has led to additional root loss. Flooding leads to anaerobic soil conditions where plant roots do not receive adequate oxygen. Without adequate oxygen, roots (including tree and shrub roots) die. Once again, loss of roots equals reduced water uptake which will eventually translate into branch dieback.

Girdling roots are another common contributor to branch dieback in certain trees. Girdling roots oftentimes occur when trees have been planted too deeply, and these roots grow around the trunk of a tree (rather than outward from the trunk) and eventually prevent the trunk from expanding properly, thus cutting off vascular tissue and "strangling" the tree. General poor growth, leaf or needle browning and yellowing, and branch dieback can be typical symptoms.

Finally there can be other, non-root rot-related diseases that can lead to branch dieback. Prime among these are vascular wilts and canker diseases. Vascular wilts are caused by pathogens (oftentimes fungi) that invade the water-conducting tissue within a tree or shrub and block water movement in this tissue. Thus water cannot get from the plant's root system to the upper branches, resulting in branch wilting. Major vascular wilt diseases include Dutch elm disease, oak wilt and Verticillium wilt. Canker diseases are caused by certain pathogens (again oftentimes fungi) that



Girdling root on maple.

locally infect individual branches eventually girdling and killing them.

As the growing season continued, drier conditions that we normally see in late summer exacerbated any problems that trees and shrubs were already experiencing. If you need help in diagnosing any of the problems discussed in this article (or any other tree diseases for that matter), feel free to contact the Plant Disease Diagnostics Clinic at 608-262-2863 or bdh@plantpath.wisc.edu for assistance.

January 14–16, 2009 – *Mid-Am Horticulture Trade Show*, McCormick Place West, Chicago. Visit www.midam.org/.

January 15, 2009 – ACT Brown Bag Lunch webcast, "Marketing & Communications, Part IV: Advertising & Promoting Tree Events," noon–1:00PM. Visit http://actrees.org/.

February 1-3, 2009 – DNR Annual Urban Forestry Conference & WAA Annual Conference & Trade *Show*, Hotel Sierra (formerly the Regency Suites Hotel), Green Bay. Visit www.waa-isa.org/.

April 6–8, 2009 – Trees & Utilities National Conference, Dallas, TX. Contact the National Arbor Day Foundation, 402-474-5655, www.arborday.org or conferences@arborday.org. ♥

If there is a meeting, conference, workshop or other event you would like listed here, please contact Cindy Casey. Please see back cover for contact information.

Table 1. Land use characteristics in urban areas.

Land Use	Percent Land (%)	Trees/acre	Basal Area (ft2/ac)	Average DBH (in.)	Median DBH (in.)
Residential	38.2	63.0	21.4	5.8	3.0
ROW/Transportation	17.2	4.9	3.2	9.2	9.0
Commercial/Industrial	12.7	25.5	2.8	3.4	2.0
Institutional	8.2	0.7	0.2	7.5	7.0
Agriculture	7.9	0	0	na	na
Park/Golf	7.9	50.9	6.7	3.7	2.0
Vacant/Other	7.8	60.1	17.5	5.3	3.0

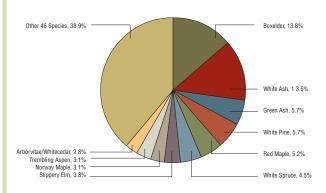
Wisconsin's Urban Forest Inventory, continued from page 1

caught the eye of decision makers at the highest level. Urban forestry has never before enjoyed this kind of awareness in Wisconsin. I'd like to share with you some of the highlights of this pioneering study, what opportunities it has provided and how you can capitalize on this in your own community or business.

Composition of Wisconsin's Urban Forests

The inventory included trees across all land uses. Residential was the dominant land use, covering 38% of urban areas (Table 1). It was found that Wisconsin's urban areas contain over 26.9 million trees, averaging 36.9 trees per acre and with an estimated total structural/replacement value of \$10.9 billion. Tree size averaged 5.4" DBH. Of the 56 tree species found in the study area, the predominant species were boxelder, white ash, green ash and white pine (Figure 2). Two genera dominate—maple and ash comprise 43% of all trees, which makes diversity a serious challenge.

Figure 2. Species composition of Wisconsin's urban forest.



Tree cover in Wisconsin's urban areas is about 14%, well below the 40% recommended by the nonprofit organization American Forests for this part of the country. Shrub cover is about 4%. Maintained grass and other herbaceous plants cover 54% of the ground surface below the trees and shrubs, while impervious surfaces cover 31% of the ground.

Urban Forest Condition

Forest health data collected on crown conditions and occurrence of damage indicated the urban forests of Wisconsin are generally healthy and vigorous. Despite this, 19% of urban trees showed signs of damage (conks, vines, open wounds, cankers, etc.) White ash and boxelder were the most frequently damaged trees.

Pests can still impact a healthy forest. In particular, the emerald ash borer (EAB) poses a risk to 20 percent of Wisconsin's urban forest. EAB could eliminate 5.2 million ash trees in urban areas with an associated replacement value of \$1.5 billion. This is a conservative value and does not consider the cost to remove the existing trees and stumps which could double that cost, nor does it consider the lost environmental, social and economic services provided by our ash trees.

Environmental Services

The study was able to quantify some of the environmental benefits that Wisconsin's urban forests provide including pollution removal, carbon storage, carbon sequestration and energy reduction.

Trees within Wisconsin urban areas and immediately surrounding forests remove \$36.4 million worth of pollution (ozone, particulate matter, nitrous oxide, etc.) annually.

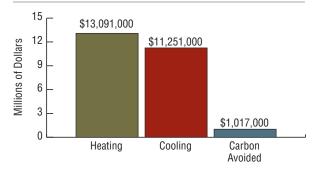
Wisconsin urban trees store \$42 million worth of carbon.

An additional \$2.4 million worth of carbon is sequestered annually by the urban forest.

Trees reduce heating and cooling expenses by \$24.3 million annually, with an additional \$1 million worth of carbon production avoided because of reduced energy demand (Figure 3).

These values tend to increase with increased size and numbers of healthy trees. Sustaining forest health and longevity is critical to sustaining these benefits through time. Many other environmental, economic and social benefits provided by urban trees, such as storm water reduction, increased property values and improved neighborhoods, are yet to be quantified.

Figure 3. Estimated energy savings and carbon emission avoidance savings by season due to urban trees in Wisconsin.



Doors Have Been Opened

State policymakers have long conceded that community trees are "nice," but without hard data, the value of our urban forests has never been truly acknowledged, as evidenced by the poor budget performance urban forestry traditionally suffers.

This first urban forest inventory has provided the opportunity to change that, and in the 12 short months since this report was released, a lot has changed. Here are some examples:

The Wisconsin Urban Forestry Council used the inventory as the basis to issue its first comprehensive report to the secretary and state forester of the DNR identifying major issues and recommending a \$2.5 million investment in urban forestry through its "20 million by 2020" tree planting and management initiative.

The governor-appointed Wisconsin Council on Forestry endorsed "20 million by 2020" and also advised DNR to include it in its budget.

For the first time ever, the secretary of the DNR opened the statewide Urban Forestry and Wisconsin Arborist Association annual conference, recognizing the importance of this resource and industry to Wisconsin.

The Wisconsin Governor's Global Warming Task Force utilized the urban forest inventory data to develop a recommendation for urban tree planting which was endorsed by both the Agriculture & Forestry, and the Conservation and Energy Efficiency working groups and was included in the final list of recommendations.

With the discovery of EAB, both the number of ash and the potential costs have proven invaluable to raising media and policymaker awareness of the impact on communities from this invasive pest.

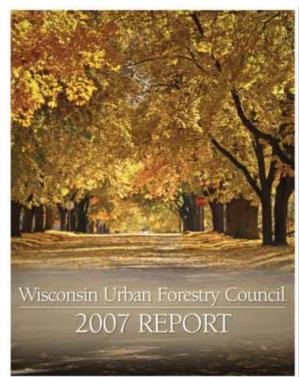
How Can This Statewide Inventory Help You?

You can certainly use the Forest Service report or the Wisconsin Urban Forestry Council report to demonstrate to your elected officials or your customers the quantified values that urban trees provide, the threat of EAB or the need for planting a wider diversity of tree

species. But first and foremost, you should use our experience to justify doing your own inventory and then using your local information to your advantage.

Understand that this statewide inventory is a broad generalization. We have already seen that individual communities can vary greatly from the average statewide values. EAB is the most urgent issue that needs accurate numbers to predict impact on your community. While the statewide average is 20% ash, some communities have reported over 50% ash on their streets. This difference could have a profound effect on forestry budgets, not to mention impacts on a community's solid waste stream, storm water runoff, energy consumption and water usage.

As it has done for the state, an inventory of your community's urban forest, coupled with a UFORE or similar analysis, can help you better manage your resource, but most importantly it can give your advocates the ammunition they need to get you the support or business you need. In these difficult economic times, it is even more critical to show those who hold the purse strings that trees can actually help solve many of the challenges they face, in addition to looking nice.



PRESENTED TO THE WISCONSIN DEPARTMENT OF NATURAL RESOURCE

More Information

You can find links to the complete Forest Service study, the Wisconsin Urban Forestry Council report, the Governor's Global Warming Task Force report, emerald ash borer information and DNR urban forester contacts at our website:

http://dnr.wi.gov/forestry/uf/.

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Oak wilt and general forestry informational kiosk developed through a DNR Urban Forestry Grant.

On February 28, 2006, the public works and parks committee established a Tree City USA board. The goal was to meet or exceed all standards by the end of 2006. The first daunting task facing the committee was to review and update ordinances. By October the committee succeeded with the updates and gained approval of the village board. Another major step was celebrating Arbor Day on April 28, 2006. The village invited the students and chaperones from a local elementary school to plant trees in Lower Whiting Park. There were speeches, games and tree educational opportunities for all involved. This was a huge success for the community and we could not wait to have the kids back for the following year. By the end of the first year the village had accomplished all the standards and achieved Tree City USA status.

DNR Urban Forestry Coordinator Don Kissinger was paramount in helping the village receive an urban forestry grant in 2007. The grant addressed oak wilt education and its control in our well field. The village was very concerned about the spread of oak wilt, since it had already killed approximately eight acres of oaks,

Village Forester Matt Riberich at 2007 Arbor Day celebration demonstrating proper tree planting.

as well as how tree loss would impact local water quality. The infected areas were logged off and cleared from the area. Still concerned about the root grafts, we performed a double line trench to separate the roots of healthy trees from the stumps of the infected trees. With oak wilt under control at the park, we began to focus on educating the public about oak wilt.

Educational outreach began at the trailheads in the well field with the construction of two informational kiosks with high-quality signage. A brochure was produced that discussed oak wilt and the tree walk located in the well field. Trees of many different species were planted along the trail with signs describing the benefits of these trees. Overall, trail use and oak wilt awareness have both increased greatly. Most importantly oak wilt has been controlled and about 30 acres of mature oaks adjacent to the infection center have been saved. The work completed in the well field was a great success and a huge step forward for our urban forestry program.

Future goals for the village include continuing to educate the public-via fliers, public events and the quarterly village newsletter—on the value of trees and how to care for them. We are also trying to start an



LEAF's Forest Education Specialist and village tree board member Sarah Gilbert leading a session at 2007 Arbor Day celebration.

inventory of trees in our parks and streets to reveal the value and benefits of our trees. Once the inventory is complete we will be able to create a master work plan for the urban forest. The village is even looking into starting our own nursery for street tree planting and tree replacement in our parks. With the creation of the Tree City USA committee the village will always be committed to improving our urban forest.

We give special thanks to the DNR urban forestry program, their great staff and the grants that they offer. Without their help the village would not be where it is today with its urban forestry program. With our central location and great park system, we welcome everyone to come and take time to enjoy the village and everything we have to offer, especially the shade under our great trees.

Tree-mendous Benefits

by Todd Ernster, City Forester City of Stevens Point

The City of Stevens Point Forestry Department wanted to make residents more aware of the real dollar benefits public trees provide. As part of a WI DNR Urban Forestry Grant the forestry department produced a brochure called *In Stevens Point Money Does Grow on Trees*. Using the city's street tree inventory and Stratum software the benefits trees provide were calculated. Also with the help of an intern student from the UWSP urban forestry program the overall value of the city's street trees was calculated and included in the brochure.

The forestry department worked with the city's water department on the storm water runoff benefit figure that Stratum produced. The forestry department also worked with the street and engineering departments to produce an accurate figure on costs street trees incur. It was an important step to include these three city departments not only to obtain an accurate number, but also to avoid any potential questioning of the numbers derived. The brochure was then presented to Stevens Point's park board along with a slide presentation. Two thousand random residents received the brochure along with the city newsletter. The brochure is also available on the city's website at http://stevensPoint.com/forestry.

Another part of the department's awareness campaign was the creation of signs to be placed on the front of the city's seven transit buses. Short slogans tied to the brochure were designed. Six slogans were selected with one repeated. The signs are 32 inches by 18 inches. Signs of this size range in cost from \$32–60 apiece. The signage on the front of the bus is open for city use, and the rest of the bus signage is for paid advertising. The forestry department has used this open signage in regards to oak wilt and tree watering issues with much public awareness success as the buses and signs are highly visible. The tree benefit-related slogans are meant to reinforce trees as a positive asset.

The brochure and the signage have been well received

Correction

In the article "Students Celebrate Arbor Day" featured in the early summer edition, a long-time supporter of Wisconsin Arbor Day programs, the Wisconsin Nursery Association was not accurately recognized. For many, many years the Wisconsin Nursery Association has donated a tree to each of the six student winners of the poster and writing contests for planting at a local community site. The article incorrectly listed the donor as the Wisconsin Arborist Association. We apologize for the error and express our appreciation to the Wisconsin Nursery Association for their continued support of Wisconsin youth and their efforts to make Wisconsin not only more beautiful but a cleaner and healthier place to live!



City of Stevens Point transit bus carries the Tree-mendous Benefits message.

by residents, city departments and elected officials. The forestry department thinks it is important to stress the importance of trees and the proper management of trees at this time in light of tight budgets and emerald ash borer. Should you desire further information, contact City Forester Todd Ernster at 715-346-1532 or email: ternster@ci.stevens-point.wi.us.



Six slogans were selected with each featured separately on 32" x 18" bus signage.

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Does your community or organization have an idea, project or information that may be beneficial to others? Please let your regional urban forestry coordinator know. We will print as many of these as we can. If you see ideas you like here, give the contact person a call. They may be able to help you in your urban forestry efforts.

The Idea Exchange...

compiled by Olivia Witthun, Urban Forestry Assistant DNR Northeast Region

Wisconsin Tree ID on Your iPod

The University of Wisconsin's Department of Botany has developed a new tree and woody plant identification tool. It is a free software program downloadable to your iPod for a portable, easy-to-use guide to all native trees and shrubs of the state, as well as common exotic species. It uses a dichotomous key with color images that can be viewed on your iPod screen. It is browsable by common or scientific name and also includes a glossary. *Info:*

https://mywebspace.wisc.edu/cwoodwar/web/iPodKey.html. >



Tree Planting to Offset CO₂ from Playground Equipment

Landscape Structures Inc., a national manufacturer of playground equipment for schools and city parks, has entered into a partnership with American Forests to offset the CO₂ produced during the manufacture of each of its playsystems. Landscape Structures will calculate the total amount of CO₂ produced in the manufacturing process, and then have trees planted through American Forests' Global ReLeaf initiative to offset that amount of CO₂. You could modify this "green" idea to directly benefit your community by planting these CO₂-offsetting trees in your urban forest, perhaps to shade the very playground receiving new play equipment. *Info:*

www.americanforests.org/news/display.php?id=193. >



Using the Tree City USA Growth Award Program

How can a community commit to not only maintaining their tree care program, but also expanding it each year? In order to compel their program's advancement Ithaca, New York, wrote into their urban forestry master plan that they will earn a Growth Award annually. This forces them to stretch and grow each year. So instead of becoming complacent in their program, they look for new partnerships and ways to collaborate in order to meet their goals. This inclusion of annual growth awards as a goal enables Ithaca to stay on the cutting edge of urban forestry. *Info: Arbor Day Foundation 2008 Annual Report. [Tree City USA Bulletin]. J.R. Fazio, editor.*

City Giving Green Gifts for the Holidays This Year

Tired of giving the same old sweater or fruitcake as holiday gifts? Are you looking for a gift that can help your community and the environment? Well look no further. This year the City of Boston is offering the gift of trees, a gift that could ultimately last a lifetime. For \$50, the city will ensure that a tree is planted in Boston as part of the Grow Boston Greener campaign, planting 100,000 trees in Boston by 2020. Trees will be planted on both public property and private property.

The donation offsets the use of a Christmas tree and is a unique idea for those simply in the spirit of giving. Trees make great gifts to oneself and neighborhood. Best of all, the donations help support trees citywide. The recipient of the gift will receive a holiday card from the donor and the donor will receive a letter of receipt. This gift is a tax deductable donation to the Fund for Parks Department. *Info: Boston Parks Department, 617-635-4989.*

Urban & Community Forestry Program Resources:

Online Seminars for Municipal Arborists

compiled by Cindy Casey DNR West Central Region

If limited travel budgets prevent you from attending conferences, try visiting Online Seminars for Municipal Arborists at http://on-line-seminars.com. This website offers a way to keep up with some of the latest information from researchers and industry leaders on topics of interest to arborists and urban foresters. Participation is convenient and free—no registration fees, no motels, no travel hassles and 24–7 availability! Each seminar consists of approximately ten topics, presented as short articles. Seminar topics change every two months. Each seminar article contains an

optional forum feature that allows participants to exchange thoughts about the topic. Articles and forums are offered at no cost. By participating in the forums, certified arborists can earn CEU credits from International Society of Arboriculture.

Seminars date back to spring of '05. Past seminars are archived and the articles are available as Word documents, upon request. Archived articles do not contain the forum feature and are not eligible for CEUs.

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Urban Forestry Annual Conference & Trade Show

Chase away the winter doldrums by attending the DNR Annual Urban Forestry Conference/Wisconsin Arborist Association Annual Conference & Trade Show on February 1–3, 2009, in Green Bay. This year's theme is "Keeping Your Trees & People Healthy" and offers a variety of topics that are sure to pique your interest.

If you've considered making an EAB readiness plan but found it too daunting or just never got around to it, the Sunday afternoon workshop will help you identify the necessary pieces to put together a plan that works for your community. Come away with a prioritized list of components needed to develop your individualized readiness plan!

Hear from a mayor, a city council member and a tree board chair on what it takes to get trees and tree programs noticed by local elected officials. Find out how to get funding and support to grow and sustain your program. Learn some basics about climate change, the role trees play and how you can capitalize on the connection to garner support for your program.

Can you save trees during construction? Should you even try? What are the true costs? Learn from an expert with years of practical experience applying solutions that work.

Join us for an entire morning of EAB talk. Find out what's really going on in Illinois and why you should care. Bring your specific questions about EAB pesticide treatment (products, timing, dosage, etc...). Understand how EAB quarantines will affect you. Learn what others in Wisconsin are already doing about wood waste and urban ash utilization.

Do you need a refresher course on the rules, regulations and laws pertaining to your equipment, its transportation and Wisconsin's tree laws? Learn OSHA's requirements for annual and daily inspections of aerial equipment. Find answers to legal questions municipalities and tree care companies face when dealing with trees.

Join your colleagues from around the state for an informal exchange of urban forestry program ideas during the Tuesday afternoon networking session. Presenters from Tuesday morning's EAB session will also be available for a more in-depth, municipality-focused discussion.

Save the date and look for a conference brochure in your mailbox by January. Registration information will also be available on the Wisconsin Arborist Association website at www.waa-isa.org/.

Continued from page 7

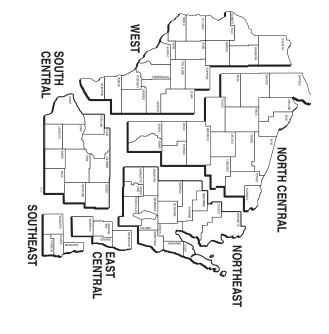
What Damaged This Tree?



o: Linda Williams.

Answer: Hail can damage trees by tearing bark, breaking branches, and stripping leaves.

Wisconsin DNR Urban and Community Forestry Contacts



World Wide Web Site: http://dnr.wi.gov/forestry/uf/

Address Service requested

P.O. Box 7921, Madison WI 53707

Community Forests Wisconsin Urbain &

> Cynthia.Casey-Widstrand@Wisconsin.gov e-mail: Regional Urban Forestry Coord. 1300 West Clairemont Ave. Fax: (715) 839-6076 Eau Claire, WI 54702 Box 4001 Cindy Casey Phone: (715) 839-1606

North Central

e-mail: Don.Kissinger@Wisconsin.gov 5301 Rib Mountain Drive Phone: (715) 359-5793 Fax: (715) 355-5253 Wausau, WI 54401 Regional Urban Forestry Coord. Don Kissinger

South Central

Jeff Roe e-mail: Jeffrey.Roe@Wisconsin.gov Fax: (608) 275-3338 Fitchburg, WI 53711 3911 Fish Hatchery Road Regional Urban Forestry Coord. Phone: (608) 275-3256

> e-mail: Richard.Rideout@Wisconsin.gov Madison, WI 53707 Phone: (608) 267-0843 State Urban Forestry Coord. Northeast PO Box 7921 Dick Rideout State Coordinator Fax: (608) 266-8576 101 S. Webster St.

e-mail: Tracy.Salisbury@Wisconsin.gov Green Bay, WI 54307-0448 PO Box 10448 Fax: (920) 662-5413 Phone: (920) 662-5450 2984 Shawano Ave. Regional Urban Forestry Coord. Tracy Salisbury

e-mail: Kim.Sebastian@Wisconsin.gov Regional Urban Forestry Coord. 2300 N. Martin Luther King Jr. Dr. Milwaukee, WI 53212 Phone: (414) 263-8602 Southeast & East Central Fax: (414) 263-8483 Kim Sebastian



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